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Title : Reproductive and ecological functions of adult male alliances in bottlenose dolphins, Tursiops truncatus, in Sarasota Bay, Florida

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Abstract : Cooperative alliances between mammalian males are uncommon, particularly among non-relatives. However, in a variety of taxa, males have cooperated to gain access to females for mating opportunities. Male alliances which also serve ecological functions have rarely been observed. In this study, we addressed the following: do the stable, long-term alliances which form between pairs of adult male bottlenose dolphins in Sarasota, Florida, serve reproductive and/or ecological functions and more generally, what implications does this have for cooperation theory? The degree of relatedness between alliance partners was quantified using 8 microsatellite markers for 26 alliances from 1980-2001. Alliance partners were no more related to one another than to non-alliance males (NAMs) and thus, males did not preferentially form alliances with close relatives. Alliance function was assessed behaviorally through focal follows on 14 alliance males (AMs, 7 pair alliances) and 6 NAMs for 2 consecutive breeding and non-breeding seasons from May, 2000 - March, 2002. Potentially receptive females were the nearest neighbors of AMs significantly more often (t-test, $p=0.023$), and AMs also maintained close proximity to the most attractive females for longer periods of time than NAMs. These two differences indicate that AMs have greater access than NAMs to females for mating opportunities and support the hypothesized reproductive function of the alliance. Additionally, AMs spent significantly more time in the coastal, Gulf of Mexico, rather than bay waters in the winter months than NAMs ($\chi^2=120.97$, $df=1$, $p<0.001$) where sharks and prey species may be more abundant, and spent less time searching for prey during this time, suggesting that alliances provide enhanced predator protection which grants access to habitat where prey may be densest. This study supported our hypothesis that male alliances serve both reproductive and ecological functions, and that mechanisms other than kin selection form the evolutionary basis for their formation and maintenance.